Nanotechnology Test Results of Bacterial Growth on Surfaces after using Zoono® at Arlington Heights Veterinary Clinic

Pinpoint Resolutions, LLC / Arlington Heights Veterinary Clinic

The following is the summary of a 30-day study conducted at Arlington Heights Veterinary Clinic in Bloomington, Indiana from August through September, 2019.

BACKGROUND:

In discussions with various Veterinarians, it is always a regimented course of action to keep the Veterinary Clinic free of germs and viruses due to the very nature of the patient.

It's difficult to ask the 185-pound St. Bernard to stop drooling as he meets another friend and explores new areas of the waiting room. Or the shy, colorfully patterned Munchkin Cat to stop sneezing while she allows her temperature to be taken in the exam room. All the best sanitizing and cleaning was done, but efforts were a continual practice with the volume of pets coming to the office for care and comfort.

Dr. Miller was in search of more practical solutions that were being done in other areas of healthcare that could be adopted to help the furry extended family.

In speaking with Dr. Miller, Pinpoint Resolutions LLC introduced the Zoono® technology that represented a new science named Nanotechnology. With the various forms of application, this active microbial barrier would soon be the exact solution.

It begins with a simple and safe disinfectant based on the chemistry of chlorine dioxide, then an application of the protectant creates a mechanical barrier providing an antimicrobial environment that cannot diminish in strength, cannot leave the surface to which it is applied and cannot allow the organisms that it targets to acclimate. It's a stealth solution used in protecting the pets and people visiting and working at the clinic.

TESTING THE VETERINARY MEDICAL ENVIRONMENT:

Dr. Miller, being the scientist first and the compassionate Veterinarian second, wanted to test the products making sure this was the best solution. The test was a routine treated vs. control environmental, and was measured in the number of colonies formed with:

- **[Low] r**epresenting under 1000 colonies;
- **[Medium]** representing 1001–10,000 colonies; and
- **[High]** representing over 10,001 colonies.

The results would allow Dr. Miller to measure the ability of Zoono® to preserve the sterile state of surfaces in the Veterinary Clinic as compared to normal use conditions. If the Zoono® technology in the most highly trafficked areas of the clinic, can deliver a meaningfully quantitative benefit as compared to current sanitation best practices, then Arlington Heights Veterinary Clinic will utilize this technology throughout the entire clinic.

TEST HYPOTHESIS:

Treatment of hard surfaces with Zoono® will result in a measurable sustained hygienic environmental state as compared to surfaces under similar conditions, not treated with Zoono®.

TESTING PROTOCOL:

The procedure for testing the Zoono® product is to culture two areas within the same vicinity, in the Veterinary Clinic lobby. This will be a vertical surface near the reception counter where coughing dogs and sneezing cats have the highest exposure. The lobby was chosen as the location to test due to the high rate of exposure to sick patients.

Most concerns from owners over nosocomial infection, arise from contact with pathogens in the lobby, making this an ideal testing area and consequently a strong selling point when determining if the product works well.

The procedure will start with culturing both surfaces before any products are applied. The next step is to clean both surfaces with a quaternary ammonium disinfectant and then apply the Zoono® product to one of the two areas. The spray will be used instead of the fogger so that cross contamination is less likely and the true results from the Zoono® product verses the non-treated area can be studied in a controlled environment.

After application of the Zoono® product, the vertical surface (where the testing is taking place), will be cultured at one-week intervals for one month / four weeks. **(See Graphs 1-4)**

The culture process will be to use swab and culturette. This will then be sent to an independent outside laboratory to be evaluated. The laboratory can perform quantity of colonies found and identity of the bacteria.

RESULTS SUMMARY:

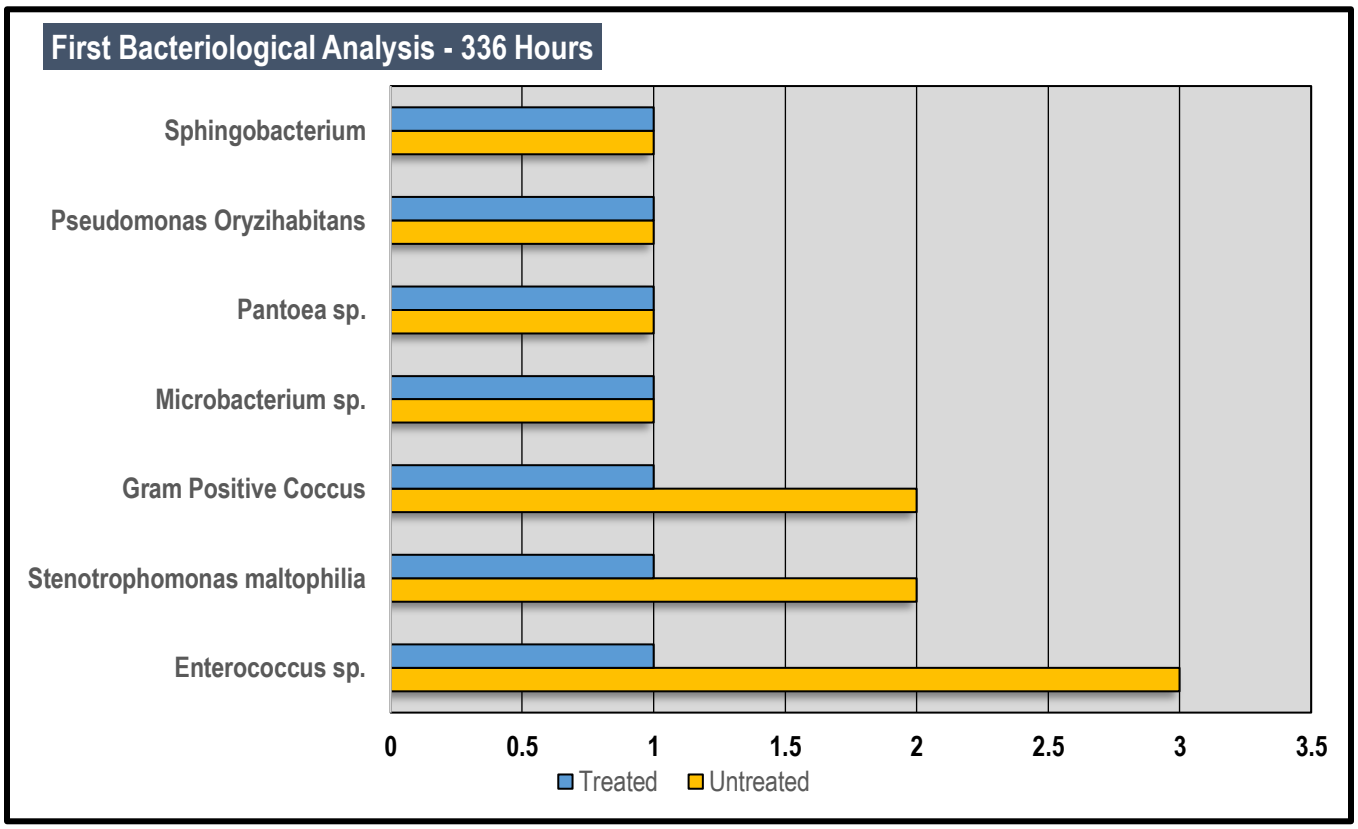
In **Table 1** shows the summary of the results of each vertical surface. These results reflected that within the untreated area that bacteria level increased as the cumulative number of days and hours amplified, and the treated area experienced no bacterial growth until one type Sphingobacterium appeared. This microorganism is ubiquitous in nature but is rarely involved in human infections. Sphingobacterium can be found in soil, on plants, in foodstuffs and in water sources. Sphingobacterium species have the ability to survive in moist hospital environments[1].

TABLE 1

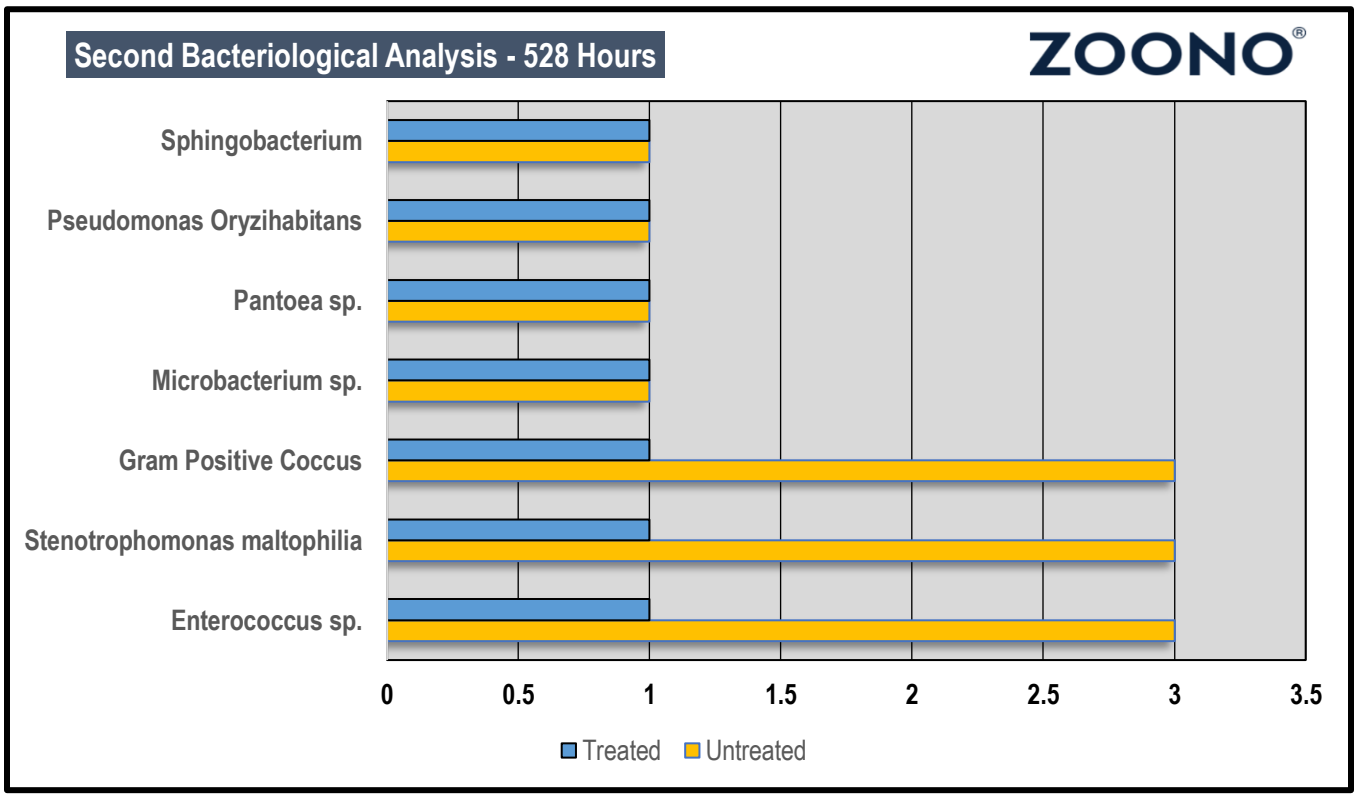
ZOONO®

START DATE 8/6/19					UNTREATED	TREATED
					BOTH SIDES CLEANED WITH DISENFECTANT	
Collection Date	Results Reported	Cumulative Number of Days	Cumulative Number of Hours	Bacteria Identified Name		ZOONO APPLIED
FIRST BACTERIOLOGICAL ANALYSIS					1 = No Growth 2= Moderate Growth 3 = Excessive Growth	
8/13/2019	8/20/2019	14	336			
				Enterococcus sp.	3	1
				Stenotrophomonas maltophilia	2	1
				Gram Positive Coccus	2	1
				Microbacterium sp.	1	1
				Pantoea sp.	1	1
				Pseudomonas Oryzihabitans	1	1
				Sphingobacterium	1	1
SECOND BACTERIOLOGICAL ANALYSIS					1 = No Growth 2= Moderate Growth 3 = Excessive Growth	
8/20/2019	8/28/2019	22	528			
				Enterococcus sp.	3	1
				Stenotrophomonas maltophilia	3	1
				Gram Positive Coccus	3	1
				Microbacterium sp.	1	1
				Pantoea sp.	1	1
				Pseudomonas Oryzihabitans	1	1
				Sphingobacterium	1	1
THIRD BACTERIOLOGICAL ANALYSIS					1 = No Growth 2= Moderate Growth 3 = Excessive Growth	
8/28/2019	9/6/2019	30	720			
				Enterococcus sp.	3	1
				Stenotrophomonas maltophilia	3	1
				Gram Positive Coccus	3	1
				Microbacterium sp.	2	1
				Pantoea sp.	3	1
				Pseudomonas Oryzihabitans	3	1
				Sphingobacterium	2	2

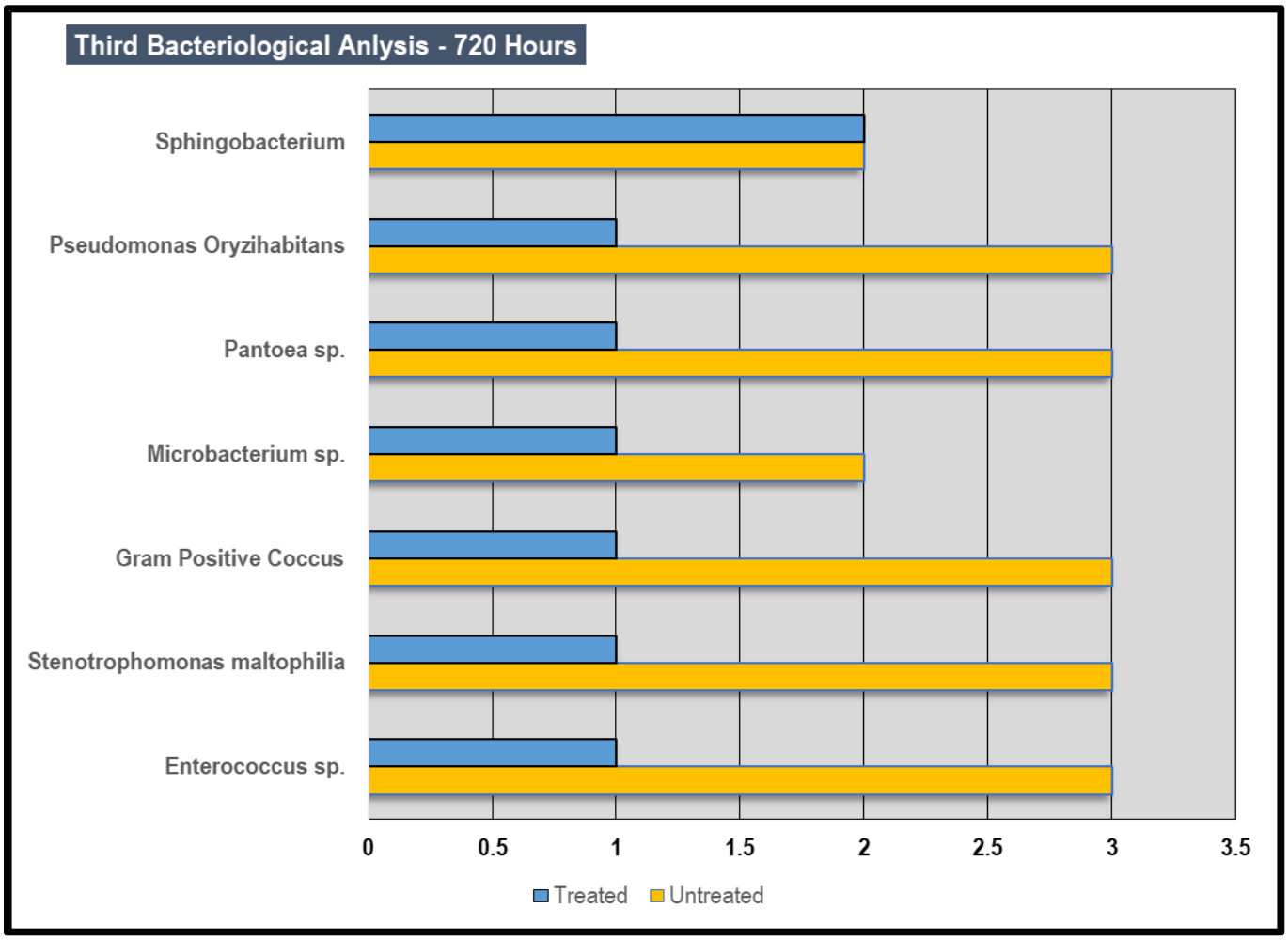
GRAPH 1



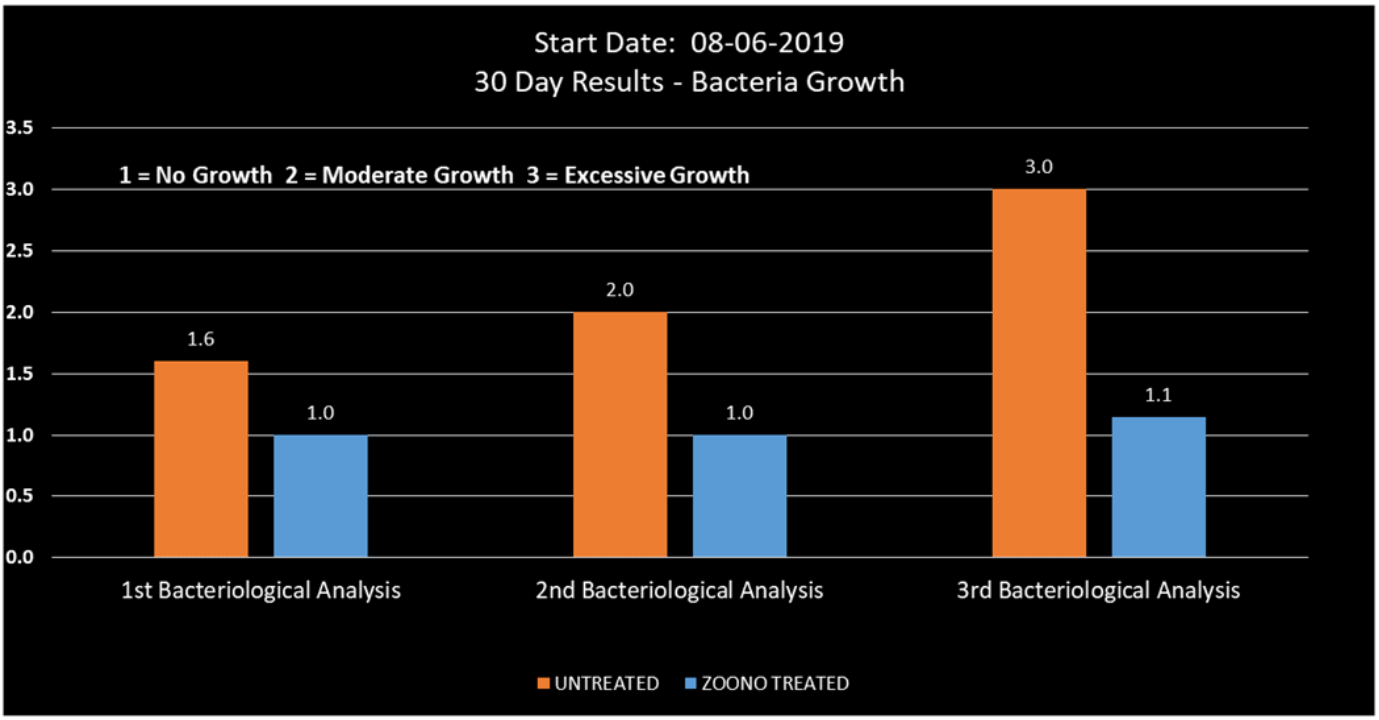
GRAPH 2



GRAPH 3



GRAPH 4

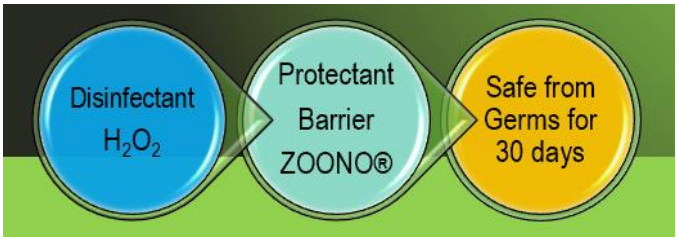


CONCLUSION:

The performance of Zoono® in this study showed that not only would the addition of Zoono® products such as *Microbe Shield* improve the overall level of sanitation in treated areas, the product shows that bacteria accumulation and formation are reduced, and consequently contamination is not able to begin. As the continued use of Zoono® products to include, disinfectant and then the application of the protectant over time, there will be a hygienically improved state in the treated environments.

Lastly, the daily cleansing with harmful disinfectants is not good for constant use. There are some disinfectant manufacturers that make the contemptible claim that their product will "kill ALL germs and viruses" to protect your family. Unfortunately, not all disinfectants are effective against every type of bacteria or bug and while you may think these products are keeping you healthy and safe; the actuality is that some of them may be harmful to both your health and the environment.[2]

Allow the mechanical properties of Nanotechnology destroy the harmful bacteria and create a once-a-month process as the evidence throughout this paper has demonstrated.



RECOMMENDATIONS:

- To improve environmental hygiene of the facility, it is recommended that a broader deployment of Zoono® be considered. This additional deployment may begin as a strategic targeting of presumed high contamination areas that may include the Clinic surgery area, Recovery or PACU, Kennel, Restrooms, Office Waiting Area, Exam Rooms etc.
- Surface and environmental hygiene is an important piece in maintaining a healthy, sanitary environment. However, as the CDC reports hands are the number one vector of germ transmission with 80% of germs that make people sick are attributable to hand hygiene. Healthy hands combined with sanitary surfaces is the best combination of practices to break the cycle of infection and ensure healthy populations, in particular employees so as to mitigate illness related absenteeism.

"As one Veterinarian to another, I was amazed with the credibility of the Zoono® product and learned the full technology found in Nanotechnology. Since my patients can't wash their paws easily, I and my wonderful staff have to protect our patients. By completing a 30-day hygienic process to include Zoono® has given me a level of confidence, that I am doing no harm while increasing my patients' and staff safety."

Dr. Robert Dale Miller II, DVM - Arlington Heights Veterinary Hospital

[1.] Sphingobacterium multivorum: case report and literature review; F. Barahona and J. Slim; New Microbes New Infect. 2015 Sep; 7: 33–36.

[2.] Disinfectants: Bad for Microbes, Bad for You: TUFTS ENVIRONMENTAL HEALTH AND SAFETY; VOLUME VIII, ISSUE 3; Page 9.